TABLE 503
ALLOWABLE HEIGHT AND BUILDING AREAS
Height limitations shown as stories and feet above grade plane.
Area limitations as determined by the definition of "Area, building," per floor.

		TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
	HGT(feet)									
GROUP	Hgt(S)	UL	160	65	55	65	55	65	50	40
A-1	S A	UL UL	5 UL	3 15,500	2 8,500	3 14,000	2 8,500	3 15,000	2 11,500	1 5,500
A-2	S A	UL UL	11 UL	3 15,500	2 9,500	3 14,000	2 9,500	3 15,000	2 11,500	1 6,000
A-3	S A	UL UL	11 UL	3 15,500	2 9,500	3 14,000	2 9,500	3 15,000	2 11,500	1 6,000
A-4	S A	UL UL	11 UL	3 15,500	2 9,500	3 14,000	2 9,500	3 15,000	2 11,500	1 6,000
A-5	S A	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL	UL UL
B	S A	UL UL	11 UL	5 37,500	4 23,000	5 28,500	4 19,000	5 36,000	3 18,000	2 9,000
E	S A	UL UL	5 UL	3 26,500	2 14,500	3 23,500	2 14,500	3 25,500	1 18,500	1 9,500
F-1	S A	UL UL	11 UL	4 25,000	2 15,500	3 19,000	2 12,000	4 33,500	2 14,000	1 8,500
F-2	S A	UL UL	11 UL	5 37,500	3 23,000	4 28,500	3 18,000	5 50,500	3 21,000	2 13,000
H-1	S A	1 21,000	1 16,500	1 11,000	1 7,000	1 9,500	1 7,000	1 10,500	1 7,500	NP NP
H-2	S A	UL 21,000	3 16,500	2 11,000	1 7,000	2 9,500	1 7,000	2 10,500	1 7,500	1 3,000
H-3	S A	UL UL	6 60,000	4 26,500	2 14,000	4 17,500	2 13,000	4 25,500	2 10,000	1 5,000
H-4	S A	UL UL	7 UL	5 37,500	3 17,500	5 28,500	3 17,500	5 36,000	3 18,000	2 6,500
H-5	S A	3 UL	3 UL	3 37,500	3 23,000	3 28,500	3 19,000	3 36,000	3 18,000	2 9,000
I-1	S A	UL UL	9 55,000	4 19,000	3 10,000	4 16,500	3 10,000	4 18,000	3 10,500	2 4,500
I-2	S A	UL UL	4 UL	2 15,000	1 11,000	1 12,000	Np Np	1 12,000	1 9,500	NP NP
I-3	S A	UL UL	4 UL	2 15,000	1 11,000	2 10,500	1 7,500	2 12,000	2 7,500	1 5,000
I-4	S A	UL UL	5 60,500	3 26,500	2 13,000	3 23,500	2 13,000	3 25,500	1 18,500	1 9,000
M	S A	UL UL	11 UL	4 21,500	4 12,500	4 18,500	4 12,500	4 20,500	3 14,000	1 9,000
R-1	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,000
R-2[a]	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,000
R-3[a]	S A	UL UL	11 UL	4 UL	4 UL	4 UL	4 UL	4 UL	3 UL	3 UL
R-4	S A	UL UL	11 UL	4 24,000	4 16,000	4 24,000	4 16,000	4 20,500	3 12,000	2 7,000
S-1	S A	UL UL	11 48,000	4 26,000	3 17,500	3 26,000	3 17,500	4 25,500	3 14,000	1 9,000
S-2	S A	UL UL	11 79,000	5 39,000	4 26,000	4 39,000	4 26,000	5 38,500	4 21,000	2 13,500
U	S A	UL UL	5 35,500	4 19,000	2 8,500	3 14,000	2 8,500	4 18,000	2 9,000	1 5,500

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m^2.
UL = Unlimited
a. As applicable in Section 101.2.

505.5 Industrial equipment platforms. Industrial equipment platforms in buildings shall not be considered as a portion of the floor below. Such equipment platforms shall not contribute to the building area as regulated by Section 503.1. Such equipment platforms shall not contribute to the number of stories as regulated by Section 503.1. The area of the industrial equipment platform shall not be included in determining the fire area. Industrial equipment platforms shall not be a part of any mezzanine, and such platforms and the walkways, stairs and ladders providing access to an equipment platform, shall not serve as a part of the means of egress from the building.

505.5.1 Area limitations. The aggregate area of all industrial equipment platforms within a room shall not exceed two-thirds of the area of the room in which they occur. Where an equipment platform is located in the same room as a mezzanine, the area of the mezzanine shall be determined by Section 505.2, and the combined aggregate area of the equipment platforms and mezzanines shall not exceed two-thirds of the room in which they occur.

505.5.2 Fire suppression. Industrial equipment platforms shall be fully protected by an automatic sprinkler system above and below the platform, installed in accordance with Section 903.3.

505.5.3 Guards. Equipment platforms shall have guards where required by Section 1003.2.12.

SECTION 506
AREA MODIFICATIONS

506.1 General. The areas limited by Table 503 shall be permitted to be increased due to frontage (I_f) and automatic sprinkler system protection (I_s) in accordance with the following:

$$A_a = A_t + \left[\frac{A_t I_f}{100}\right] + \left[\frac{A_t I_s}{100}\right] \qquad \textbf{(Equation 5-1)}$$

where:

A_a = Allowable area per floor (square feet).

A_t = Tabular area per floor in accordance with Table 503 (square feet).

I_f = Area increase due to frontage (percent) as calculated in accordance with Section 506.2.

I_s = Area increase due to sprinkler protection (percent) as calculated in accordance with Section 506.3.

506.1.1 Basements. A single basement need not be included in the total allowable area provided such basement does not exceed the area permitted for a one-story building.

506.2 Frontage increase. Every building shall adjoin or have access to a public way to receive an area increase for frontage. Where a building has more than 25 percent of its perimeter on a public way or open space having a minimum width of 20 feet (6096 mm), the frontage increase shall be determined in accordance with the following:

$$I_f = 100\left[\frac{F}{P} - 0.25\right]\frac{W}{30} \qquad \textbf{(Equation 5-2)}$$

where:

I_f = Area increase due to frontage (percent).

F = Building perimeter which fronts on a public way or open space having 20 feet (6096 mm) open minimum width (feet).

P = Perimeter of entire building (feet).

W = Minimum width of public way or open space (feet).

506.2.1 Width limits. W must be at least 20 feet (6096 mm) and the quantity W divided by 30 shall not exceed 1.0 except that for buildings which are permitted to be unlimited in area by Section 503.1.2, Section 507 or Section 508, the quantity W divided by 30 shall not exceed 2.0.

506.2.2 Open space limits. Such open space shall be either on the same lot or dedicated for public use and shall be accessed from a street or approved fire lane.

506.3 Automatic sprinkler system increase. Where a building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the area limitation in Table 503 is permitted to be increased by 200 percent (I_s = 200) for multistory buildings and 300 percent (I_s = 300) for single-story buildings.

Exception: Group H-1, H-2 or H-3.

SECTION 507
UNLIMITED AREA BUILDINGS

507.1 Unsprinklered, one-story. The area of a one-story, Group F-2 or S-2 building shall not be limited when the building is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

507.2 Sprinklered, one-story. The area of a one-story, Group A-4, B, F, M or S building shall not be limited when the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1, and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

Exceptions:

1. Buildings and structures of Types I and II construction for rack storage facilities, which do not have access by the public shall not be limited in height provided that such buildings conform to the requirements of Section 507.1 and NFPA 13.
2. The automatic sprinkler system shall not be required in areas occupied for indoor participant sports, such as tennis, skating, swimming and equestrian activities, in occupancies in Group A-4, provided that:
   2.1. Exit doors directly to the outside are provided for occupants of the participant sports areas; and
   2.2. The building is equipped with a fire alarm system with manual fire alarm boxes installed in accordance with Section 907.

507.3 Two-story. The area of a two-story, Group B, F, M or S building shall not be limited when the building is provided with

6. The plumbing well, water service and pressure tank shall be of a size and capacity to supply the hydraulically most remote sprinkler with the required waterflow and pressure for a minimum of 10 minutes.
7. A pilot line shall be connected from the manual-wet sprinkler system to the plumbing water supply system at the well pressure tank. The pilot line shall be of a size that is adequate to supply the hydraulically most remote sprinkler in the system.
8. The connection of a manual-wet sprinkler system to a plumbing water supply system shall be protected against backflow conditions in accordance with ch. Comm 82.
9. The actuation of any sprinkler in the system shall operate the waterflow indicating device, which shall initiate a fire alarm within the building.
10. Upon actuation of the building fire alarm, a fire alarm signal shall be sent automatically to the fire department providing fire protection to the building.

(c) Installer qualifications. The installation or alteration of a manual-wet sprinkler system shall be performed by a licensed individual as specified for the installation of an automatic fire sprinkler system under subch. V of ch. Comm 5.

[F] SECTION 905 STANDPIPE SYSTEMS

905.1 General. Standpipe systems shall be provided in new buildings and structures in accordance with this section. Firehose threads used in connection with standpipe systems shall comply with NFPA 1963 or as otherwise approved and shall be compatible with fire department hose threads. The location of fire department hose connections shall be approved. In buildings used for high-piled combustible storage, fire protection shall be in accordance with the *International Fire Code*.

905.2 Installation standards. Standpipe systems shall be installed in accordance with this section and NFPA 14.

905.3 Required installations. Standpipe systems shall be installed where required by Sections 905.3.1 through 905.3.6 and in the locations indicated in Sections 905.4, 905.5 and 905.6. Standpipe systems are permitted to be combined with automatic sprinkler systems.

Exception: Standpipe systems are not required in Group R-3 occupancies as applicable in Section 101.2.

905.3.1 Building height. Class III standpipe systems shall be installed throughout buildings where the floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access, or where the floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access.

Exceptions:

1. Class I standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or Section 903.3.1.2.
2. Class I manual standpipes are allowed in open parking garages where the highest floor is located not more than 150 feet (45 720 mm) above the lowest level of fire department vehicle access.
3. Class I manual dry standpipes are allowed in open parking garages that are subject to freezing temperatures, provided that the hose connections are located as required for Class II standpipes in accordance with Section 905.5.
4. Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system.

905.3.2 Building area. In buildings exceeding 10,000 square feet (929 m^2) in area per story, Class I automatic wet or manual wet standpipes shall be provided where any portion of the building's interior area is more than 200 feet (60 960 mm) of travel, vertically and horizontally, from the nearest point of fire department vehicle access.

Exceptions:

1. Buildings equipped throughout with automatic sprinkler systems installed in accordance with Section 903.3.1.1.
2. Group A-4, A-5, F-2, R-2, S-2 or U occupancies.
3. Automatic dry and semiautomatic dry standpipes are allowed as provided for in NFPA 14.

905.3.3 Group A. Class I automatic wet standpipes shall be provided in nonsprinklered Group A buildings having an occupant load exceeding 1,000 persons.

Exceptions:

1. Open-air-seating spaces without enclosed spaces.
2. Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings where the highest floor surface used for human occupancy is 75 feet (22 860 mm) or less above the lowest level of fire department vehicle access.

905.3.4 Covered mall buildings. Covered mall buildings and buildings connected thereto shall be equipped throughout with a Class I automatic wet standpipe system.

905.3.5 Stages. Stages greater than 1,000 square feet in area (93 m^2) shall be equipped with a Class III wet standpipe system with 1.5-inch and 2.5-inch (38 mm and 64 mm) hose connections on each side of the stage.

Exception: Where the building or area is equipped throughout with an automatic sprinkler system, the hose connections are allowed to be supplied from the automatic sprinkler system and shall have a flow rate of not less than that required by NFPA 14 for Class III standpipes.

905.3.5.1 Hose and cabinet. The 1.5-inch (38 mm) hose connections shall be equipped with sufficient lengths of

1.5-inch (38 mm) hose to provide fire protection for the stage area. Hose connections shall be equipped with an approved adjustable fog nozzle and be mounted in a cabinet or on a rack.

905.3.6 Underground buildings. Underground buildings shall be equipped throughout with a Class I automatic wet or manual wet standpipe system.

905.4 Location of Class I standpipe hose connections. Class I standpipe hose connections shall be provided in all of the following locations:

1. In every required stairway, a hose connection shall be provided for each floor level above or below grade. Hose connections shall be located at an intermediate floor level landing between floors, unless otherwise approved by the building official.
2. On each side of the wall adjacent to the exit opening of a horizontal exit.
3. In every exit passageway at the entrance from the exit passageway to other areas of a building.
4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an exit passageway or exit corridor to the mall.
5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-percent slope), each standpipe shall be provided with a hose connection located either on the roof or at the highest landing of stairways with stair access to the roof. An additional hose connection shall be provided at the top of the most hydraulically remote standpipe for testing purposes.
6. Where the most remote portion of a nonsprinklered floor or story is more than 150 feet (45 720 mm) from a hose connection or the most remote portion of a sprinklered floor or story is more than 200 feet (60 960 mm) from a hose connection, the building official is authorized to require that additional hose connections be provided in approved locations.

905.4.1 Protection. Risers and laterals of Class I standpipe systems not located within an enclosed stairway or pressurized enclosure shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located.

Exception: In buildings equipped throughout with an approved automatic sprinkler system, laterals that are not located within an enclosed stairway or pressurized enclosure are not required to be enclosed within fire-resistance-rated construction.

905.4.2 Interconnection. In buildings where more than one standpipe is provided, the standpipes shall be interconnected in accordance with NFPA 14.

905.5 Location of Class II standpipe hose connections. Class II standpipe hose connections shall be accessible and shall be located so that all portions of the building are within 30 feet (9144 mm) of a nozzle attached to 100 feet (30 480 mm) of hose.

905.5.1 Groups A-1 and A-2. In Group A-1 and A-2 occupancies with occupant loads of more than 1,000, hose connections shall be located on each side of any stage, on each side of the rear of the auditorium, on each side of the balcony and on each tier of dressing rooms.

905.5.2 Protection. Fire-resistance-rated protection of risers and laterals of Class II standpipe systems is not required.

905.5.3 Class II system 1-inch hose. A minimum 1-inch (25.4 mm) hose shall be permitted to be used for hose stations in light-hazard occupancies where investigated and listed for this service and where approved by the building official.

905.6 Location of Class III standpipe hose connections. Class III standpipe systems shall have hose connections located as required for Class I standpipes in Section 905.4 and shall have Class II hose connections as required in Section 905.5.

905.6.1 Protection. Risers and laterals of Class III standpipe systems shall be protected as required for Class I systems in accordance with Section 905.4.1.

905.6.2 Interconnection. In buildings where more than one Class III standpipe is provided, the standpipes shall be interconnected at the bottom.

905.7 Cabinets. Cabinets containing fire-fighting equipment such as standpipes, fire hose, fire extinguishers or fire department valves shall not be blocked from use or obscured from view.

905.7.1 Cabinet equipment identification. Cabinets shall be identified in an approved manner by a permanently attached sign with letters not less than 2 inches (51 mm) high in a color that contrasts with the background color, indicating the equipment contained therein.

Exceptions:

1. Doors not large enough to accommodate a written sign shall be marked with a permanently attached pictogram of the equipment contained therein.
2. Doors that have either an approved visual identification clear glass panel or a complete glass door panel are not required to be marked.

905.7.2 Locking cabinet doors. Cabinets shall be unlocked.

Exceptions:

1. Visual identification panels of glass or other approved transparent frangible material that is easily broken and allows access.
2. Approved locking arrangements.
3. Group I-3.

905.8 Dry standpipe. In buildings requiring standpipes, dry standpipes complying with NFPA 14 are permitted when, in the opinion of the building official, an approved water supply is not available or when the standpipe is subject to freezing.

905.9 Valve supervision. Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the valve will generate a supervisory signal at the supervising station required by Section 903.4. Where a

910.2.1 Groups F-1 and S-1. Buildings and portions thereof used as a Group F-1 or S-1 occupancies having more than 50,000 square feet (4645 m^2) in undivided area.

910.2.2 Group H. Buildings and portions thereof used as a Group H occupancy in accordance with Section 415.6.

910.2.3 High-piled combustible storage. Buildings and portions thereof containing high-piled combustible stock or rack storage in any occupancy group in accordance with Section 413 and the *International Fire Code*.

910.2.4 Exit access travel distance increase. Buildings and portions thereof used as a Group F-1 or S-1 occupancy where the maximum exit access travel distance is increased in accordance with Section 1004.2.4.1.

910.3 Design and installation. The design and installation of smoke and heat vents and draft curtains shall be as specified in this section and Table 910.3.

910.3.1 Vent operation. Smoke and heat vents shall be approved and labeled and shall be capable of being operated by approved automatic and manual means. Automatic operation of smoke and heat vents shall conform to the provisions of this section.

910.3.1.1 Gravity-operated drop-out vents. Automatic smoke and heat vents containing heat-sensitive glazing designed to shrink and drop out of the vent opening when exposed to fire shall fully open within 5 minutes after the vent cavity is exposed to a simulated fire, represented by a time-temperature gradient that reaches an air temperature of 500°F (260°C) within 5 minutes.

910.3.1.2 Sprinklered buildings. Where installed in buildings provided with an approved automatic sprinkler system, smoke and heat vents shall be designed to operate automatically.

910.3.1.3 Nonsprinklered buildings. Where installed in buildings not provided with an approved automatic sprinkler system, smoke and heat vents shall operate automatically by actuation of a heat-responsive device rated at between 100°F (38°C) and 220°F (104°C) above ambient.

Exception: Gravity-operated drop-out vents complying with Section 910.3.1.1

910.3.2 Vent dimensions. The effective venting area shall not be less than 16 square feet (1.5 m^2) with no dimension less than 4 feet (1219 mm), excluding ribs or gutters having a total width not exceeding 6 inches (152 mm).

910.3.3 Vent locations. Smoke and heat vents shall be located 20 feet (6096 mm) or more from lines of adjacent properties and fire walls and 10 feet (3048 mm) or more from fire barrier walls. Vents shall be uniformly located within the roof area above high-piled storage areas, with consideration given to roof pitch, curtain board location, sprinkler head location and structural members.

910.3.4 Curtain boards. Where curtain boards are required, they shall be provided in accordance with this section.

910.3.4.1 Construction. Curtain boards shall be constructed of sheet metal, lath and plaster, gypsum board,

TABLE 910.3
REQUIREMENTS FOR CURTAIN BOARDS AND SMOKE VENTING[a]

OCCUPANCY GROUP AND COMMODITY CLASSIFICATION	DESIGNATED STORAGE HEIGHT (feet)	MINIMUM CURTAIN BOARD DEPTH (feet)	MAXIMUM AREA FORMED BY CURTAIN BOARDS (square feet)[b]	VENT AREA TO FLOOR AREA RATIO	MAXIMUM SPACING OF VENT CENTERS (feet)	MAXIMUM DISTANCE TO VENTS FROM WALL OR CURTAIN BOARDS[c] (feet)
Group F-1	—	$0.2 \times H^d$ but ≥ 4	50,000	1:100	120	60
Group S-1 I-IV (Option 1)	≤ 20	6	10,000	1:100	100	60
	> 20 ≤ 40	6	8,000	1:75	100	55
Group S-1 I-IV (Option 2)	≤ 20	4	3,000	1:75	100	55
	> 20 ≤ 40	4	3,000	1:50	100	50
Group S-1 High hazard (Option 1)	≤ 20	6	6,000	1:50	100	50
	> 20 ≤ 30	6	6,000	1:40	90	45
Group S-1 High hazard (Option 2)	≤ 20	4	4,000	1:50	100	50
	> 20 ≤ 30	4	2,000	1:30	75	40

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m^2.

a. Commodity classifications and requirements for rack storage heights in excess of those indicated shall be in accordance with the *International Fire Code*. For solid-piled storage heights in excess of those indicated, an approved engineered design shall be used.

b. When areas of buildings are equipped with early-suppression fast-response (ESFR) sprinklers, the curtain boards within these areas shall be located only at the separation between the ESFR and the conventional sprinkler systems.

c. The distance specified is the maximum distance from any vent in a particular curtained area to walls or curtain boards that form the perimeter of the curtained area.

d. H is the height of the vent above the floor.

or other approved materials that provide equivalent performance that will resist the passage of smoke. Joints and connections shall be smoke tight.

910.3.4.2 Location and depth. The location and minimum depth of curtain boards shall be in accordance with Table 910.3.

910.4 Mechanical smoke exhaust. Where approved by the building official, engineered mechanical smoke exhaust shall be an acceptable alternate to smoke and heat vents.

910.4.1 Location. Exhaust fans shall be uniformly spaced within each draft-curtained area and the maximum distance between fans shall not be greater than 100 feet (30 480 mm).

910.4.2 Size. Fans shall have a maximum individual capacity of 30,000 cfm (14.2 m^3/s). The aggregate capacity of smoke exhaust fans shall be determined by the equation:

$$V = A \times 300 \qquad \textbf{(Equation 9-10)}$$

where:

V = Volume of mechanical ventilation required, in cubic feet per minute (m^3/s).

A = Area of roof vents provided in square feet (m^2) in accordance with Table 910.3.

910.4.3 Operation. Mechanical smoke exhaust fans shall be automatically activated by the automatic sprinkler system or by heat detectors having operating characteristics equivalent to those described in Section 910.3.1. Individual manual controls of each fan unit shall also be provided.

910.4.4 Wiring and control. Wiring for operation and control of smoke exhaust fans shall be connected ahead of the main disconnect and protected against exposure to temperatures in excess of 1,000°F (538°C) for a period of not less than 15 minutes. Controls shall be located so as to be immediately accessible to the fire service from the exterior of the building and protected against interior fire exposure by fire barriers having a fire-resistance rating not less than 1 hour.

910.4.5 Supply air. Supply air for exhaust fans shall be provided at or near the floor level and shall be sized to provide a minimum of 50 percent of required exhaust. Openings for supply air shall be uniformly distributed around the periphery of the area served.

910.4.6 Interlocks. In combination comfort air-handling/smoke removal systems or independent comfort air-handling systems, fans shall be controlled to shut down in accordance with the approved smoke control sequence.

[F] SECTION 911
FIRE COMMAND CENTER

911.1 Features. Where required by other sections of this code, a fire command center for fire department operations shall be provided. The location and accessibility of the fire command center shall be separated from the remainder of the building by not less than a 1-hour fire-resistance-rated fire barrier. The room shall be a minimum of 96 square feet (9 m^2) with a minimum dimension of 8 feet (2438 mm). A layout of the fire command center and all features required by the section to be contained therein shall be submitted for approval prior to installation. The fire command center shall comply with NFPA 72 and shall contain the following features.

1. The emergency voice/alarm communication system unit.
2. The fire department communications unit.
3. Fire detection and alarm system annunciator unit.
4. Annunciator visually indicating the location of the elevators and whether they are operational.
5. Status indicators and controls for air-handling systems.
6. The fire-fighter's control panel required by Section 909.16 for smoke control systems installed in the building.
7. Controls for unlocking stairway doors simultaneously.
8. Sprinkler valve and water-flow detector display panels.
9. Emergency and standby power status indicators.
10. A telephone for fire department use with controlled access to the public telephone system.
11. Fire pump status indicators.
12. Schematic building plans indicating the typical floor plan and detailing the building core, means of egress, fire protection systems, fire-fighting equipment and fire department access.
13. Work table.
14. Generator supervision devices, manual start and transfer features.
15. Public address system, where specifically required by other sections of this code.

CHAPTER 10
MEANS OF EGRESS

SECTION 1001
ADMINISTRATION

1001.1 General. Buildings or portions thereof shall be provided with a means of egress system as required by this chapter. The provisions of this chapter shall control the design, construction and arrangement of means of egress components required to provide an approved means of egress from structures and portions thereof.

1001.2 Minimum requirements. It shall be unlawful to alter a building or structure in a manner that will reduce the number of exits or the capacity of the means of egress to less than required by this code.

[F] 1001.3 Maintenance. Means of egress shall be maintained in accordance with the *International Fire Code.*

SECTION 1002
DEFINITIONS

1002.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ACCESSIBLE MEANS OF EGRESS. A continuous and unobstructed way of egress travel from any point in a building or facility that provides an accessible route to an area of refuge, a horizontal exit or a public way.

AISLE ACCESSWAY. That portion of an exit access that leads to an aisle.

ALTERNATING TREAD DEVICE. A device that has a series of steps between 50 and 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time.

AREA OF REFUGE. An area where persons unable to use stairways can remain temporarily to await instructions or assistance during emergency evacuation.

BLEACHERS. A grandstand where the seats are not provided with backrests.

COMMON PATH OF EGRESS TRAVEL. That portion of exit access which the occupants are required to traverse before two separate and distinct paths of egress travel to two exits are available. Paths that merge are common paths of travel. Common paths of egress travel shall be included within the permitted travel distance.

CORRIDOR. An enclosed exit access component that defines and provides a path of egress travel to an exit.

DOOR, BALANCED. A door equipped with double-pivoted hardware so designed as to cause a semi-counter-balanced swing action when opening.

EGRESS COURT. A court or yard which provides access to a public way for one or more exits.

EMERGENCY ESCAPE AND RESCUE OPENING. An operable window, door or other similar device that provides for a means of escape and access for rescue in the event of an emergency.

EXIT. That portion of a means of egress system which is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives as required to provide a protected path of egress travel between the exit access and the exit discharge. Exits include exterior exit doors at ground level, exit enclosures, exit passageways, exterior exit stairs, exterior exit ramps and horizontal exits.

EXIT ACCESS. That portion of a means of egress system that leads from any occupied point in a building or structure to an exit.

EXIT DISCHARGE. That portion of a means of egress system between the termination of an exit and a public way.

EXIT DISCHARGE, LEVEL OF. The horizontal plane located at the point at which an exit terminates and an exit discharge begins.

EXIT ENCLOSURE. An exit component that is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives, and provides for a protected path of egress travel in a vertical or horizontal direction to the exit discharge or the public way.

EXIT, HORIZONTAL. A path of egress travel from one building to an area in another building on approximately the same level, or a path of egress travel through or around a wall or partition to an area on approximately the same level in the same building, which affords safety from fire and smoke from the area of incidence and areas communicating therewith.

EXIT PASSAGEWAY. An exit component that is separated from all other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives, and provides for a protected path of egress travel in a horizontal direction to the exit discharge or the public way.

FIRE EXIT HARDWARE. Panic hardware that is listed for use on fire door assemblies.

FLOOR AREA, GROSS. The floor area within the inside perimeter of the exterior walls of the building under consideration, exclusive of vent shafts and courts, without deduction for corridors, stairways, closets, the thickness of interior walls, columns or other features. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the usable area under the horizontal projection of the roof or floor above. The gross floor area shall not include shafts with no openings or interior courts.

FLOOR AREA, NET. The actual occupied area not including unoccupied accessory areas such as corridors, stairways, toilet rooms, mechanical rooms and closets.

FOLDING AND TELESCOPIC SEATING. A structure that is used for tiered seating of occupants, and has an overall shape

and size that, for purposes of moving or storing, is capable of being reduced without being dismantled.

FOOTBOARDS. The walking surface of aisle accessways in reviewing stands, grandstands and bleachers.

GRANDSTAND. A structure providing tiered or stepped seating.

GUARD. A building component or a system of building components located at or near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to a lower level.

HANDRAIL. A horizontal or sloping rail intended for grasping by the hand for guidance or support.

MEANS OF EGRESS. A continuous and unobstructed path of vertical and horizontal egress travel from any point in a building or structure to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.

NOSING. The leading edge of treads of stairs and of landings at the top of stairway flights.

OCCUPANT LOAD. The number of persons for which the means of egress of a building or portion thereof is designed.

OPEN AIR SEATING GRANDSTANDS AND BLEACHERS. Seating facilities that are located so that the side toward which the audience faces is unroofed and without an enclosing wall.

PANIC HARDWARE. A door-latching assembly incorporating a device that releases the latch upon the application of a force in the direction of egress travel.

PUBLIC WAY. A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet (3048 mm).

RAMP. A walking surface that has a running slope steeper than one unit vertical in 20 units horizontal (5-percent slope).

REVIEWING STANDS. Elevated platforms that accommodate not more than 50 persons.

SMOKE-PROTECTED ASSEMBLY SEATING. Seating served by means of egress that is not subject to smoke accumulation within or under a structure.

STAIR. A change in elevation, consisting of one or more risers.

STAIRWAY. One or more flights of stairs, either exterior or interior, with the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one level to another.

STAIRWAY, EXTERIOR. A stairway that is open on at least one side, except for required structural columns, beams, handrails, and guards. The adjoining open areas shall be either yards, courts or public ways. The other sides of the exterior stairway need not be open.

STAIRWAY, INTERIOR. A stairway not meeting the definition of an exterior stairway.

STAIRWAY, SPIRAL. A stairway having a closed circular form in its plan view with uniform section-shaped treads attached to and radiating about a minimum-diameter supporting column.

SECTION 1003
GENERAL MEANS OF EGRESS

1003.1 General requirements. The general requirements specified in this section shall apply to all three elements of the means of egress system, in addition to those specific requirements for the exit access, the exit and the exit discharge detailed elsewhere in this chapter.

1003.2 System design requirements. The means of egress system shall comply with the design requirements of Sections 1003.2.1 through 1003.2.13.7.1.

1003.2.1 Multiple occupancies. Where a building contains two or more occupancies, the means of egress requirements shall apply to each portion of the building based on the occupancy of that space. Where two or more occupancies utilize portions of the same means of egress system, those egress components shall meet the more stringent requirements of all occupancies that are served.

1003.2.2 Design occupant load. In determining means of egress requirements, the number of occupants for whom means of egress facilities shall be provided shall be established by the largest number computed in accordance with Sections 1003.2.2.1 through 1003.2.2.3.

1003.2.2.1 Actual number. The actual number of occupants for whom each occupied space, floor or building is designed.

1003.2.2.2 Number by Table 1003.2.2.2. The number of occupants computed at the rate of one occupant per unit of area as prescribed in Table 1003.2.2.2.

TABLE 1003.2.2.2
MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

OCCUPANCY	FLOOR AREA IN SQ. FT. PER OCCUPANT
Agricultural building	300 gross
Aircraft hangars	500 gross
Airport terminal	
Baggage claim	20 gross
Baggage handling	300 gross
Concourse	100 gross
Waiting areas	15 gross
Assembly	
Gaming floors (keno, slots, etc.)	11 gross
Assembly with fixed seats	See Section 1003.2.2.9
Assembly without fixed seats	
Concentrated (chairs only—not fixed)	7 net
Standing space	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runway, and for additional areas	7 net
Business areas	100 gross
Courtrooms—other than fixed seating areas	40 net
Dormitories	50 gross

(continued)

TABLE 1609.6.2.1(1)—continued
MAIN WINDFORCE-RESISTING SYSTEM LOADS FOR A BUILDING WITH MEAN ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B[a] (psf)

BASIC WIND SPEED V (mph–3-second gust)	LOAD DIRECTION	ROOF ANGLE	HORIZONTAL LOADS[b]				VERTICAL LOADS						MAXIMUM HORIZONTAL WALL LOADS[d]			
			End zone		Interior zone		End zone		Interior zone		Windward overhang		Zone			
			Wall	Roof[c]	Wall	Roof[c]	Windward roof[e]	Leeward roof	Windward roof	Leeward roof	End zone	Interior zone	1E	4E	1	4
130	Transverse	0 to 5°	26.8	-13.9	17.8	-8.2	-32.3	-18.3	-22.4	-14.2	-45.1	-35.3	20.4	-15.7	14.9	-12.1
		20°	37.1	-9.8	24.7	-5.4	-32.2	-22.4	-22.4	-17.0	-45.1	-35.3	25.2	-21.1	18.3	-15.7
		30° < angle ≤ 45°	30.1	20.6	24.0	16.5	11.6	-18.3	10.0	-15.7	-10.6	-12.1	22.4	-17.0	19.1	-14.2
	Longitudinal	All angles	26.8	-13.9	17.8	-8.2	-32.2	-18.3	-22.4	-14.2	-45.1	-35.3	20.4	-15.7	14.9	-12.1
140	Transverse	0 to 5°	31.1	-16.1	20.6	-9.6	-37.3	-21.2	-26.0	-16.4	-52.3	-40.9	23.6	-18.2	17.3	-14.0
		20°	43.0	-11.4	28.7	-6.3	-37.3	-26.0	-26.0	-19.7	-52.3	-40.9	29.3	-24.5	21.2	-18.2
		30° < angle ≤ 45°	35.0	23.9	27.8	19.1	13.4	-21.2	11.7	-18.2	-12.3	-14.0	26.0	-19.7	22.1	-16.4
	Longitudinal	All angles	31.1	-16.1	20.6	-9.6	-37.3	-21.2	-26.0	-16.4	-52.3	-40.9	23.6	-18.2	17.3	-14.0
145	Transverse	0 to 5°	33.3	-17.3	22.1	-10.3	-40.1	-22.8	-27.9	-17.6	-56.1	-43.9	25.3	-19.6	18.6	-15.1
		20°	46.2	-12.2	30.8	-6.7	-40.1	-27.9	-27.9	-21.2	-56.1	-43.9	31.4	-26.3	22.8	-19.6
		30° < angle ≤ 45°	37.5	25.6	29.8	20.5	14.4	-22.8	12.5	-19.6	-13.1	-15.1	27.9	-21.2	23.7	-17.6
	Longitudinal	All angles	33.3	-17.3	22.1	-10.3	-40.1	-22.8	-27.9	-17.6	-56.1	-43.9	25.3	-19.6	18.6	-15.1
150	Transverse	0 to 5°	35.7	-18.5	23.7	-11.0	-42.9	-24.4	-29.8	-18.9	-60.0	-47.0	27.1	-20.9	19.9	-16.1
		20°	49.4	-13.0	32.9	-7.2	-42.9	-29.8	-29.8	-22.6	-60.0	-47.0	33.6	-28.1	24.4	-20.9
		30° < angle ≤ 45°	40.1	27.4	31.9	22.0	15.4	-24.4	13.4	-20.9	-14.1	-16.1	29.8	-22.6	25.4	-18.9
	Longitudinal	All angles	35.7	-18.5	23.7	-11.0	-42.9	-24.4	-29.8	-18.9	-60.0	-47.0	27.1	-20.9	19.9	-16.1
170	Transverse	0 to 5°	45.8	-23.8	30.4	-14.1	-55.1	-31.3	-38.3	-24.2	-77.1	-60.4	34.8	-26.9	25.6	-20.7
		20°	63.4	-16.7	42.3	-9.3	-55.1	-38.3	-38.3	-29.1	-77.1	-60.4	43.2	-36.1	31.3	-26.9
		30° < angle ≤ 45°	51.5	35.2	41.0	28.2	19.8	-31.3	17.2	-26.9	-18.1	-20.7	38.3	-29.1	32.6	-24.2
	Longitudinal	All angles	45.8	-23.8	30.4	-14.1	-55.1	-31.3	-38.3	-24.2	-77.1	-60.4	34.8	-26.9	25.6	-20.7

For SI: 1 foot = 304.8 mm, 1 degree = 0.01745 rad.

a. Presssures for roof angles between 5° and 20° and between 20° and 30° shall be interpolated from the table.

b. Pressures are the sum of the windward and leeward pressures and shall be applied to the windward elevation of the building in accordance with Figure 1609.6(3).

c. If pressure is less than 0, use 0.

d. "Max. Horizontal Wall Loads" are only for the design of wall elements which also support roof framing. As part of the MWFRS, these elements shall be designed for the interaction of vertical and horizontal loads or have independent mechanisms for each load. For interaction design of walls as MWFRS, the vertical roof loads shall be the "Vertical Loads" from Table 1609.6.2.1(1), and the horizontal loads shall be the "Max. Horizontal Wall Loads." The zone loads shall be applied as shown in Figure 1609.6(1) and as follows: 1E to the Windward Wall End Zone, 4E to the Leeward Wall End Zone, 1 to the Windward Wall Interior Zone, and 4 to the Leeward Wall Interior Zone [Comm 62.1609 (2) (a)].

e. Note that there are two load conditions between 20° and 30°. Negative pressure from 20° to 30° shall be interpolated using a pressure value of 0 for 30°. Positive pressures between 25° and 30° shall be interpolated using a pressure value of 0 for 25° [Comm 62.1609 (2) (b)].

TABLE 1609.6.2.1(2)
COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B[a] (psf)

	ZONE PER FIGURE 1609.6(2)	EFFECTIVE WIND AREA[a] (ft^2)	BASIC WIND SPEED V (mph–3-second gust)																					
			85		90		100		105		110		120		125		130		140		145		150		170	
Roof > 0 to 10 Degrees	1	10	10.0	-13.0	10.0	-14.6	10.0	-18.0	10.0	-19.8	10.0	-21.8	10.5	-25.9	11.4	-28.1	12.4	-30.4	14.3	-35.3	15.4	-37.8	16.5	-40.5	21.1	-52.0
	1	20	10.0	-12.7	10.0	-14.2	10.0	-17.5	10.0	-19.3	10.0	-21.2	10.0	-25.2	10.7	-27.4	11.6	-29.6	13.4	-34.4	14.4	-36.9	15.4	-39.4	19.8	-50.7
	1	50	10.0	-12.2	10.0	-13.7	10.0	-16.9	10.0	-18.7	10.0	-20.5	10.0	-24.4	10.0	-26.4	10.6	-28.6	12.3	-33.2	13.1	-35.6	14.1	-38.1	18.1	-48.9
	1	100	10.0	-11.9	10.0	-13.3	10.0	-16.5	10.0	-18.2	10.0	-19.9	10.0	-23.7	10.0	-25.7	10.0	-27.8	11.4	-32.3	12.2	-34.6	13.0	-37.0	16.7	-47.6
	2	10	10.0	-21.8	10.0	-24.4	10.0	-30.2	10.0	-33.3	10.0	-36.5	10.5	-43.5	11.4	-47.2	12.4	-51.0	14.3	-59.2	15.4	-63.5	16.5	-67.9	21.1	-87.2
	2	20	10.0	-19.5	10.0	-21.8	10.0	-27.0	10.0	-29.7	10.0	-32.6	10.0	-38.8	10.7	-42.1	11.6	-45.6	13.4	-52.9	14.4	-56.7	15.4	-60.7	19.8	-78.0
	2	50	10.0	-16.4	10.0	-18.4	10.0	-22.7	10.0	-25.1	10.0	-27.5	10.0	-32.7	10.0	-35.5	10.6	-38.4	12.3	-44.5	13.1	-47.8	14.1	-51.1	18.1	-65.7
	2	100	10.0	-14.1	10.0	-15.8	10.0	-19.5	10.0	-21.5	10.0	-23.6	10.0	-28.1	10.0	-30.5	10.0	-33.0	11.4	-38.2	12.2	-41.0	13.0	-43.9	16.7	-56.4
	3	10	10.0	-32.8	10.0	-36.8	10.0	-45.4	10.0	-50.1	10.0	-55.0	10.5	-65.4	11.4	-71.0	12.4	-76.8	14.3	-89.0	15.4	-95.5	16.5	102.2	21.1	-131.3
	3	20	10.0	-27.2	10.0	-30.5	10.0	-37.6	10.0	-41.5	10.0	-45.5	10.0	-54.2	10.7	-58.8	11.6	-63.6	13.4	-73.8	14.4	-79.1	15.4	-84.7	19.8	-108.7
	3	50	10.0	-19.7	10.0	-22.1	10.0	-27.3	10.0	-30.1	10.0	-33.1	10.0	-39.3	10.0	-42.7	10.6	-46.2	12.3	-53.5	13.1	-57.4	14.1	-61.5	18.1	-78.9
	3	100	10.0	-14.1	10.0	-15.8	10.0	-19.5	10.0	-21.5	10.0	-23.6	10.0	-28.1	10.0	-30.5	10.0	-33.0	11.4	-38.2	12.2	-41.0	13.0	-43.9	16.7	-56.4
Roof > 10 to 30 Degrees	1	10	10.0	-11.9	10.0	-13.3	10.4	-16.5	11.4	-18.2	12.5	-19.9	14.9	-23.7	16.2	-25.7	17.5	-27.8	20.3	-32.3	21.8	34.6	23.3	-37.0	30.0	-47.6
	1	20	10.0	-11.6	10.0	-13.0	10.0	-16.0	10.4	-17.6	11.4	-19.4	13.6	-23.0	14.8	-25.0	16.0	-27.0	18.5	-31.4	19.9	-33.7	21.3	-36.0	27.3	-46.3
	1	50	10.0	-11.1	10.0	-12.5	10.0	-15.4	10.0	-17.0	10.0	-18.6	11.9	-22.2	12.9	-24.1	13.9	-26.0	16.1	-30.2	17.3	-32.4	18.5	-34.6	23.8	-44.5
	1	100	10.0	-10.8	10.0	-12.1	10.0	-14.9	10.0	-16.5	10.0	-18.1	10.5	-21.5	11.4	-23.3	12.4	-25.2	14.3	-29.3	15.4	-31.4	16.5	-33.6	21.1	-43.2
	2	10	10.0	-25.1	10.0	-28.2	10.4	-34.8	11.4	-38.3	12.5	-42.1	14.9	-50.1	16.2	-54.3	17.5	-58.7	20.3	-68.1	21.8	-73.1	23.3	-78.2	30.0	-100.5
	2	20	10.0	-22.8	10.0	-25.6	10.0	-31.5	10.4	-34.8	11.4	-38.2	13.6	-45.4	14.8	-49.3	16.0	-53.3	18.5	-61.8	19.9	-66.3	21.3	-71.0	27.3	-91.2
	2	50	10.0	-19.7	10.0	-22.1	10.0	-27.3	10.0	-30.1	10.0	-33.0	11.9	-39.3	12.9	-42.7	13.9	-46.1	16.1	-53.5	17.3	-57.4	18.5	-61.4	23.8	-78.9
	2	100	10.0	-17.4	10.0	-19.5	10.0	-24.1	10.0	-26.6	10.0	-29.1	10.5	-34.7	11.4	-37.6	12.4	-40.7	14.3	-47.2	15.4	-50.6	16.5	-54.2	21.1	-69.6
	3	10	10.0	-25.1	10.0	-28.2	10.4	-34.8	11.4	-38.3	12.5	-42.1	14.9	-50.1	16.2	-54.3	17.5	-58.7	20.3	-68.1	21.8	-73.1	23.3	-78.2	30.0	-100.5
	3	20	10.0	-22.8	10.0	-25.6	10.0	-31.5	10.4	-34.8	11.4	-38.2	13.6	-45.4	14.8	-49.3	16.0	-53.5	18.5	-61.8	19.9	-66.3	21.3	-71.0	27.3	-91.2
	3	50	10.0	-19.7	10.0	-22.1	10.0	-27.3	10.0	-30.1	10.0	-33.0	11.9	-39.3	12.9	-42.7	13.9	-46.1	16.1	-53.5	17.3	-57.4	18.5	-61.4	23.8	-78.9
	3	100	10.0	-17.4	10.0	-19.5	10.0	-24.1	10.0	-26.6	10.0	-29.1	10.5	-34.7	11.4	-37.6	12.4	-40.7	14.3	-47.2	15.4	-50.6	16.5	-54.2	21.1	-69.6
Roof > 30 to 45 Degrees	1	10	11.9	-13.0	13.3	-14.6	16.5	-18.0	18.2	-19.8	19.9	-21.8	23.7	-25.9	25.7	-28.1	27.8	-30.4	32.3	-35.3	34.6	-37.8	37.0	-40.5	47.6	-52.0
	1	20	11.6	-12.3	13.0	-13.8	16.0	-17.1	17.6	-18.8	19.4	-20.7	23.0	-24.6	25.0	-26.7	27.0	-28.9	31.4	-33.5	33.7	-35.9	36.0	-38.4	46.3	-49.3
	1	50	11.1	-11.5	12.5	-12.8	15.4	-15.9	17.0	-17.5	18.6	-19.2	22.2	-22.8	24.1	-24.8	26.0	-26.8	30.2	-31.1	32.4	-33.3	34.6	-35.7	44.5	-45.8
	1	100	10.8	-10.8	12.1	-12.1	14.9	-14.9	16.5	-16.5	18.1	-18.1	21.5	-21.5	23.3	-23.3	25.2	-25.2	29.3	-29.3	31.4	-31.4	33.6	-33.6	43.2	-43.2
	2	10	11.9	-15.2	13.3	-17.0	16.5	-21.0	18.2	-23.2	19.9	-25.5	23.7	-30.3	25.7	-32.9	27.8	-35.6	32.3	-41.2	34.6	-44.2	37.0	-47.3	47.6	-60.8
	2	20	11.6	-14.5	13.0	-16.3	16.0	-20.1	17.6	-22.2	19.4	-24.3	23.0	-29.0	25.0	-31.4	27.0	-34.0	31.4	-39.4	33.7	-42.3	36.0	-45.3	46.3	-58.1
	2	50	11.1	-13.7	12.5	-15.3	15.4	-18.9	17.0	-20.8	18.6	-22.9	22.2	-27.2	24.1	-29.5	26.0	-32.0	30.2	-37.1	32.4	-39.8	34.6	-42.5	44.5	-54.6
	2	100	10.8	-13.0	12.1	-14.6	14.9	-18.0	16.5	-19.8	18.1	-21.8	21.5	-25.9	23.3	-28.1	25.2	-30.4	29.3	-35.3	31.4	-37.8	33.6	-40.5	43.2	-52.0
	3	10	11.9	-15.2	13.3	-17.0	16.5	-21.0	18.2	-23.2	19.9	-25.5	23.7	-30.3	25.7	-32.9	27.8	-35.6	32.3	-41.2	34.6	-44.2	37.0	-47.3	47.6	-60.8
	3	20	11.6	-14.5	13.0	-16.3	16.0	-20.1	17.6	-22.2	19.4	-24.3	23.0	-29.0	25.0	-31.4	27.0	-34.0	31.4	-39.4	33.7	-42.3	36.0	-45.3	46.3	-58.1
	3	50	11.1	-13.7	12.5	-15.3	15.4	-18.9	17.0	-20.8	18.6	-22.9	22.2	-27.2	24.1	-29.5	26.0	-32.0	30.2	-37.1	32.4	-39.8	34.6	-42.5	44.5	-54.6
	3	100	10.8	-13.0	12.1	-14.6	14.9	-18.0	16.5	-19.8	18.1	-21.8	21.5	-25.9	23.3	-28.1	25.2	-30.4	29.3	-35.3	31.4	-37.8	33.6	-40.5	43.2	-52.0
Wall	4	10	13.0	-14.1	14.6	-15.8	18.0	-19.5	19.8	-21.5	21.8	-23.6	25.9	-28.1	28.1	-30.5	30.4	-33.0	35.3	-38.2	37.8	-41.0	40.5	-43.9	52.0	-56.4
	4	20	12.4	-13.5	13.9	-15.1	17.2	-18.7	18.9	-20.6	20.8	-22.6	24.7	-26.9	26.8	-29.2	29.0	-31.6	33.7	-36.7	36.1	-39.3	38.7	-42.1	49.6	-54.1
	4	50	11.6	-12.7	13.0	-14.3	16.1	-17.6	17.8	-19.4	19.5	-21.3	23.2	-25.4	25.2	-27.5	27.2	-29.8	31.6	-34.6	33.9	-37.1	36.2	-39.7	46.6	-51.0
	4	100	11.1	-12.2	12.4	-13.6	15.3	-16.8	16.9	-18.5	18.5	-20.4	22.0	-24.2	23.9	-26.3	25.9	-28.4	30.0	-33.0	32.2	-35.4	34.4	-37.8	44.2	-48.6
	5	10	13.0	-17.4	14.6	-19.5	18.0	-24.1	19.8	-26.6	21.8	-29.1	25.9	-34.7	28.1	-37.6	30.4	-40.7	35.3	-47.2	37.8	-50.6	40.5	-54.2	52.0	-69.6
	5	20	12.4	-16.2	13.9	-18.2	17.2	-22.5	18.9	-24.8	20.8	-27.2	24.7	-32.4	26.8	-35.1	29.0	-38.0	33.7	-44.0	36.1	-47.2	38.7	-50.5	49.6	-64.9
	5	50	11.6	-14.7	13.0	-16.5	16.1	-20.3	17.8	-22.4	19.5	-24.6	23.2	-29.3	25.2	-31.8	27.2	-34.3	31.6	-39.8	33.9	-42.7	36.2	-45.7	46.6	-58.7
	5	100	11.1	-13.5	12.4	-15.1	15.3	-18.7	16.9	-20.6	18.5	-22.6	22.0	-26.9	23.9	-29.2	25.9	-31.6	30.0	-36.7	32.2	-39.3	34.4	-42.1	44.2	-54.1

SECTION 3006
MACHINE ROOMS

3006.1 Access. An approved means of access shall be provided to elevator machine rooms and overhead machinery spaces.

Comm 62.3006 (1) Note: See ch. Comm 18 for additional machine room access requirements.

3006.2 Venting. Elevator machine rooms that contain solid-state equipment for elevator operation shall be provided with an independent ventilation or air- conditioning system to protect against the overheating of the electrical equipment. The system shall be capable of maintaining temperatures within the range established for the elevator equipment.

3006.3 Pressurization. The elevator machine room serving a pressurized elevator hoistway shall be pressurized upon activation of a heat or smoke detector located in the elevator machine room.

Comm 62.3006 (2) Exception: An elevator machine room which serves a pressurized elevator hoistway and which is not directly connected to the pressurized elevator shaft is not required to be pressurized.

3006.4 Machine rooms and machinery spaces. Elevator machine rooms and machinery spaces shall be enclosed with construction having a fire-resistance rating not less than the required rating of the hoistway enclosure served by the machinery. Openings shall be protected with assemblies having a fireresistance rating not less than that required for the hoistway enclosure doors.

3006.5 Shunt trip. Where elevator hoistways or elevator machine rooms containing elevator control equipment are protected with automatic sprinklers, a means installed in accordance with NFPA 72, Section 3-9.4, Elevator Shutdown, shall be provided to disconnect automatically the main line power supply to the affected elevator prior to the application of water. This means shall not be self-resetting. The activation of sprinklers outside the hoistway or machine room shall not disconnect the main line power supply.

3006.6 [Comm 62.3006 (3)] Plumbing systems. Plumbing systems not used in connection with the operation of the elevator may not be located in elevator equipment rooms.

CHAPTER 34
EXISTING STRUCTURES

Comm 62.3400 (2) Community-based residential facilities serving 20 or fewer unrelated residents. Where an existing building or portion thereof is converted to a community-based residential facility serving 20 or fewer residents who are not related to the operator or administrator, the building or portion thereof shall be classified as Group R-4. The building or portion thereof shall comply with the provisions of this code that are applicable to a Group R-4 occupancy.

SECTIONS 3401 - 3405
Deleted

SECTION 3406
HISTORIC BUILDINGS

3406.1 [Comm 62.3406] Historic buildings. The construction, repair, alteration, addition, restoration, movement, and change of occupancy of historic buildings shall comply with ch. Comm 70.

SECTION 3407
MOVED STRUCTURES
Deleted

SECTION 3408
ACCESSIBILITY FOR EXISTING BUILDINGS

3408.1 [Comm 62.3408 (1)] Scope.

(a) General. Except as specified in par. (b), the requirements in Sections 3408.2 to 3408.7.14 apply to maintenance, change of occupancy, additions and alterations to existing buildings, including those identified as historic buildings.

(b) Exception: When dwelling units are remodeled in housing with three or more dwelling units, the dwelling units shall comply with sub. (4). The term "remodeled" has the meaning given in s. 101.132 (1) (h), Stats., and the term "housing" has the meaning given in s. 106.50 (1) (L), Stats.

Note: Under section 101.132 (1) (h), Wisconsin Stats., "remodel" means to substantially improve, alter, extend or otherwise change the structure of a building or change the location of exits, but does not include maintenance, redecoration, reroofing or alteration of mechanical or electrical systems.

Note: Under section 106.50 (1) (L), Wisconsin Stats., "housing" means any improved property, or any portion thereof, including a mobile home as defined in s. 66.0435 (1) (d) or condominium, that is used or occupied, or is intended , arranged or designed to be used or occupied, as a home or residence. "Housing" includes any vacant land that is offered for sale or rent for the construction or location thereon of any building, structure or portion thereof that is used or occupied, or is intended, arranged or designed to be used or occupied, as a home or residence.

3408.2 Maintenance of facilities. A building, facility or element that is constructed or altered to be accessible shall be maintained accessible during occupancy.

3408.3 [Comm 62.3408 (2)] Change of occupancy.

(a) General. Except as specified in par. (b), existing buildings, or portions thereof, that undergo a change of group or occupancy shall have all of the following accessible features:

1. At least one accessible building entrance.
2. At least one accessible route from an accessible building entrance to primary function areas.
3. Signage complying with s. Comm 62.1110.
4. Accessible parking, where parking is provided.
5. At least one accessible passenger loading zone, when loading zones are provided.
6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.

(b) Exception. Where it is technically infeasible to comply with the new construction standards for any of these requirements for a change of group or occupancy, the items specified in subds. 1. to 6. shall conform to the requirements to the maximum extent technically feasible. Change of group or occupancy that incorporates any alterations or additions shall comply with par. (a), subs. (3) and (4), and IBC Sections 3408.4, 3408.5, 3408.6 and 3408.7.

3408.4 Additions. Provisions for new construction shall apply to additions. An addition that affects the accessibility to, or contains an area of primary function, shall comply with the requirements in Section 3408.6 for accessible routes.

3408.5 [Comm 62.3408 (3)] Alterations.

(a) General. A building, facility or element that is altered shall comply with the applicable provisions in ss. Comm 62.1100 to 62.1110 and ICC/ANSI A117.1, unless technically infeasible. Where compliance with this section is technically infeasible, the alteration shall provide access to the maximum extent technically feasible.

(b) Exceptions.

1. The altered element or space is not required to be on an accessible route, unless required by IBC Section 3408.6.
2. Accessible means of egress required by IBC Chapter 10 are not required to be provided in existing buildings or facilities.

3408.5.1 Extent of application. An alteration of an existing element, space, or area of a building or facility shall not impose a requirement for greater accessibility than that which would be required for new construction.

Alterations shall not reduce or have the effect of reducing accessibility of a building, portion of a building, or facility.

Comm 62.3408 (4) Accessibility requirements for remodeled housing.

(a) Remodeled housing. When housing with three or more dwelling units is remodeled, the remodeling percentages specified in s. 101.132 (2) (b), Stats., shall be applied, and the remodeling shall comply with the applicable portions of ch. Comm 62.

Note: Section 101.132 (2) (b), Wisconsin Stats., reads as follows:

1. If more than 50 percent of the interior square footage of any housing with 3 or more dwelling units is to be remodeled, the entire housing shall conform to the standards in par. (a), regardless of when the housing was first intended for occupancy.
2. If 25 percent to 50 percent of the interior square footage of any housing with three or more dwelling units is to be remodeled, that part of the housing that is to be remodeled shall conform to the standards in par. (a), regardless of when the housing was first intended for occupancy.
3. If less than 25 percent of the interior square footage of any housing with three or more dwelling units is to be remodeled, the remodeling is not subject to the standards in par. (a) unless the alteration involves work on doors, entrances, exits or toilet rooms, in which case the doors, entrances, exits or toilet rooms shall conform to the standards in par. (a) regardless of when the housing was first intended for occupancy.

(b) Remodeled buildings with multiple occupancies.

1. Except as specified in subd. 2., if a building that has multiple occupancies including housing with three or more dwelling units is remodeled, an accessible route shall be provided to the remodeled dwelling units.
2. An accessible route to the remodeled area is not required, if the cost to provide the accessible route exceeds 20 percent of the cost of the alteration, as specified in IBC Section 3408.6.

3408.6 Alterations affecting an area containing a primary function. Where an alteration affects the accessibility to, or contains an area of primary function, the route to the primary function area shall be accessible. The accessible route to the primary function area shall include toilet facilities or drinking fountains serving the area of primary function.

Exceptions:

1. The cost of providing the accessible route is not required to exceed 20 percent of the costs of the alterations affecting the area of primary function.
2. This provision does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to alterations limited solely to mechanical systems, electrical systems, installation or alteration of fire-protection systems, and abatement of hazardous materials.
4. This provision does not apply to alterations undertaken for the primary purpose of increasing the accessibility of an existing building, facility or element.

3408.7 Scoping for alterations. The provisions of Section 3408.7.1 through 3408.7.14 shall apply to alterations to existing buildings and facilities.

3408.7.1 Elevators. Altered elements of existing elevators shall comply with ASME A17.1 and ICC A117.1. Such elements shall also be altered in elevators programmed to respond to the same hall call control as the altered elevator.

3408.7.2 [Comm 62.3408 (5)] Platform lifts. Platform lifts complying with ICC/ANSI A117.1 and ch. Comm 18 shall be permitted as a component of an accessible route.

3408.7.3 Stairs and escalators in existing buildings. In alterations where an escalator or stair is added where none existed previously, an accessible route shall be provided in accordance with Sections 1104.4 and 1104.5.

3408.7.4 Ramps. Where steeper slopes than allowed by Section 1003.3.4.1 are necessitated by space limitations, the slope of ramps in or providing access to existing buildings or facilities shall comply with Table 3408.7.4.

TABLE 3408.7.4
RAMPS

SLOPE	MAXIMUM RISE
Steeper than 1:10 but not steeper than 1:8	3 inches
Steeper than 1:12 but not steeper than 1:10	6 inches

For SI: 1 inch = 25.4 mm.

3408.7.5 Dining areas. An accessible route to raised or sunken dining areas, or to outdoor seating areas is not required provided that the same services and decor are provided in an accessible space usable by any occupant and not restricted to use by people with a disability.

3408.7.6 Performance areas. Where it is technically infeasible to alter performance areas to be on an accessible route, at least one of each type of performance area shall be made accessible.

3408.7.7 Assembly areas. Seating shall adjoin an accessible route that also serves as a means of egress. Where it is technically infeasible to disperse accessible seating throughout an altered assembly area, the minimum required number of wheelchair space clusters shall be one-half of that required by Section 1107.2.2.1. In existing assembly seating areas with a mezzanine, where the main level provides three-fourths or more of the total seating capacity, wheelchair space clusters are permitted to be dispersed on the main level. Each accessible seating area shall have provisions for companion seating.

3408.7.8 Sleeping rooms and accommodations. Where I-1 sleeping rooms, I-2 sleeping rooms or patient rooms, I-3 residential units, or R-1 and R-2 sleeping accommodations are being altered or added, the requirements of Section 1107 for accessible rooms and Chapter 9 for accessible alarms apply only to the quantity of spaces being altered or added.

3408.7.9 Toilet rooms. Where it is technically infeasible to alter existing toilet and bathing facilities to be accessible, an accessible unisex toilet or bathing facility is permitted. The unisex facility shall be located on the same floor and in the same area as the existing facilities.

3408.7.10 Dressing, fitting and locker rooms. Where it is technically infeasible to provide accessible dressing, fitting or locker rooms at the same location as similar types of rooms, one accessible room on the same level shall be pro-

NCMA

National Concrete Masonry Association
2302 Horse Pen Road
Herndon, VA 22071-3499

Standard reference number	Title	Referenced in code section number
NCMA—TEK 5-8 (1978)	Design Details for Concrete Masonry Fire Walls	Table 719.1(2)

NEMA

National Electrical Manufacturers Association
2101 L Street, N.W., Suite 300
Washington, DC 20037

Standard reference number	Title	Referenced in code section number
NEMA—250—97	Enclosures for Electrical Equipment (1000 volts, Max)	1621.3.13.1
NEMA ICS 6—93	Industrial Control and System Enclosures	1621.3.13.1

NFPA

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02269-9101

Standard reference number	Title	Referenced in code section number
NFPA 11—98	Low Expansion Foam	904.7
NFPA 11A—99	Medium- and High-expansion Foam Systems	904.7
NFPA 12—98	Carbon Dioxide Extinguishing Systems	904.8, 904.11
NFPA 12A—97	Halon 1301 Fire Extinguishing Systems	904.9
NFPA 13—99	Installation of Sprinkler Systems [Comm 62.3500 (1)]	507.2, 704.12, 707.2, 903.3.1.1, 903.3.2, 903.3.5.1.1, 904.11, 907.8, 1621.3.10.1, 3104.5, 3104.9
NFPA 13D—96	Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes	903.1.2, 903.3.1.3, 903.3.5.1.1
NFPA 13R—99	Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height	903.1.2, 903.3.1.2, 903.3.5.1.1, 903.3.5.1.2, 903.4
NFPA 14—96	Standpipe and Hose System	905.2, 905.3.2, 905.3.5, 905.4.2, 905.8
NFPA 16—99	Installation of Deluge Foam-water Sprinkler and Foam-water Spray Systems	904.7, 904.11
NFPA 17—98	Dry Chemical Extinguishing Systems	904.6, 904.11
NFPA 17A—98	Wet Chemical Extinguishing Systems	904.5, 904.11
NFPA 30—00	Flammable and Combustible Liquids Code	307.9, 415.3
NFPA 30B—98	Manufacture and Storage of Aerosol Products	307.9
NFPA 32—96	Dry Cleaning Plants	415.7.4
NFPA 33—00	Spray Application Using Flammable or Combustible Materials	307.9, 416.1
NFPA 34—00	Dipping and Coating Processes Using Flammable or Combustible Liquids	307.9, 416.1
NFPA 40—97	Storage and Handling of Cellulose Nitrate Motion Picture Film	409.1
NFPA 61—95	Prevention of Fires and Dust Explosions in Agricultural Food	415.7.1
NFPA 65—93	Processing & Finishing of Aluminum	415.7.1
NFPA 72—99	National Fire Alarm Code [Comm 62.3500 (1)]	505.4, 901.6, 903.4.1, 904.3.5, 907.2, 907.2.1, 907.2.1.1, 907.2.10, 907.2.10.4, 907.2.11.2, 907.2.11.3, 907.2.12.2.3, 907.2.12.3, 907.4, 907.5, 907.9.2, 907.10, 907.14, 907.16, 907.17, 909.12, 909.12.3, 911.1, 3006.5
NFPA 80—99	Fire Doors and Fire Windows	302.1.1.1, 714.2, 714.2.6.1, 714.2.7.2, 714.3, 714.3.3, 1003.3.1.3.3
NFPA 96—98	Ventilation Control and Fire Protection of Commercial Cooking Operations	904.11
NFPA 101—97	Code for Safety to Life from Fire in Buildings and Structures	1008.5.2
NFPA 102—95	Assembly Seating, Tents and Membrane Structures	Table 1607.1
NFPA 110—99	Emergency and Standby Power Systems	2702.1
NFPA 111—96	Stored Electrical Energy Emergency and Standby Power Systems	2702.1
NFPA 120—99	Coal Preparation Plants	415.7.1
NFPA 204—98	Guide for Smoke and Heat Venting	3104.11
NFPA 252—95	Standard Methods of Fire Tests of Door Assemblies	714.2.1, 714.2.2, 714.2.3, 714.2.4.1

NFPA—continued

NFPA 253—95	Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Heat Source	804.2, 804.3
NFPA 257—96	Standard on Fire Test for Window and Glass Block Assemblies	714.2.3, 714.3, 714.3.1
NFPA 259—98	Test Method for Potential Heat of Building Materials	2603.4.1.10, 2603.5.3
NFPA 265—98	Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings	803.5.1
NFPA 268—96	Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source	1406.2.1, 1406.2.1.1, 1406.2.1.2, 2603.5.7
NFPA 285—98	Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Nonloadbearing Wall Assemblies Containing Combustible Components Using the International Scale, Multistory Test Apparatus	2603.5.5
NFPA 409—95	Standard on Aircraft	412.2.6, 412.4.5
NFPA 418—95	Standard for Heliports	412.5.6
NFPA 651—98	Manufacture of Aluminum Powder	415.7.1
NFPA 654—97	Prevention of Fire & Dust Explosions in the Chemical, Dye, Pharmaceutical, Plastics, and Industries	415.7.1
NFPA 655—93	Prevention of Sulfur Fires and Explosions	415.7.1
NFPA 664—98	Prevention of Fires Explosions in Wood Processing and Woodworking Facilities	415.7.1
NFPA 701—96	Methods of Fire Test for Flame-resistant Textiles and Films	802.1, 805.1, 805.2, 3102.3.1, 3105.3
NFPA 704—96	Standard System for the Identification of the Hazards of Materials for Emergency Response	414.7.2, 415.2
NFPA 750—96	Standard on Water Mist Fire Protection Systems [Comm 62.3500 (2)]	Comm 62.0904(1)
NFPA 1124—98	Manufacture, Transportation, and Storage of Fireworks and Pyrotechnic Articles	415.3.1
NFPA 1963—98	Fire Hose Connections	903.3.6, 905.1
NFPA 2001—96	Standard on Clean Agent Fire Extinguishing Systems	904.10
NFPA 8503—97	Pulverized Fuel Systems	415.7.1

PCI

Precast Prestressed Concrete Institute
175 W. Jackson Boulevard, Suite 1859
Chicago, IL 60604-9773

Standard reference number	Title	Referenced in code section number
MNL124—1977	Design for Fire Resistance of Precast Prestressed Concrete	720.2.3.1

PTI

Post-Tensioning Institute
1717 W. Northern Avenue, Suite 114
Phoenix, AZ 85021

Standard reference number	Title	Referenced in code section number
PTI—1996	Design and Construction of Post-tensioned Slabs-on-ground, 2nd Edition	1805.8.2

RMA

Rubber Manufacturers Association
1400 K. Street, N.W. #900
Washington, DC 20005

Standard reference number	Title	Referenced in code section number
RP-1—90	Minimum Requirements for Non-reinforced Black EPDM Rubber Sheets	1507.12.2
RP-2—90	Minimum Requirements for Fabric-reinforced Black EPDM Rubber Sheets	1507.12.2
RP-3—85	Minimum Requirements for Fabric-reinforced Black Polychloroprene Rubber Sheets	1507.12.2
RMA/SPRI RP-4—1988	Wind Design Guide for Ballasted Single-ply Roofing Systems	1504.4

H